**"Virtual world anonymity and foreign language oral interaction"**

*Abstract*

In recent years, a considerably high number of research studies have looked into the use of virtual worlds (VWs) for language learning. A number of authors have hypothesised about the effects of anonymity when foreign language interactions are conducted via VWs. This study addresses the effect that the anonymity experienced in VW interaction may have on participants that present different affective profiles. The participants are 18 students (5 male, 13 female) aged between 19 and 20 years old and registered in a Spanish undergraduate degree at University of Roehampton (London). They were involved in four tandem oral interaction activities in the VW Second Life (SL) with a group of native Spanish students from University of Cádiz (Spain). A mixed-methods research design with quantitative and qualitative data was applied. Data was collected about the participants' Foreign Language Anxiety (FLA) levels, self-efficacy beliefs and psychological profile (introvert-extravert). Participants were also asked to answer three open-ended questions about how they felt during the interaction in the VW. The results obtained reveal a strong relationship between self-efficacy beliefs and the anonymity effect experienced by students, although no correlation was found between the participants' FLA levels or personality profiles and their experience of the anonymity afforded by the VW.

*Keywords:* anonymity, virtual world, Second Life, foreign language anxiety, self-efficacy beliefs, personality.

## 1. Introduction

Many are the factors and variables that come into play when learning a foreign language (FL), the affective component being one of them. Foreign Language Anxiety (FLA) is commonly experienced by students across different language skills and levels of ability, and both teaching practitioners as well as researchers have endeavoured for decades to find the perfect recipe that will generate anxiety-free teaching environments. On the other hand, in recent years we have seen a considerably high number of research studies focusing on the use of virtual worlds (VWs) for educational purposes in general (Gregory, Lee, Delgarno & Tynan, 2016) and for language learning in particular (Sadler, 2012; Lan, 2016). These environments usually integrate chat and voice options, making it possible for geographically dispersed users to communicate with each other and allowing for telecollaboration activities to take place between students from different countries. Users are represented by their avatars, therefore providing a certain degree of anonymity, which may cause users to feel more disinhibited. In the area of FL learning and teaching, a number of authors have hypothesised about the potentially positive effects that this anonymity may have, particularly with regards to anxiety (Dickey, 2005; Cooke-Plagwitz, 2008).

This study builds on the work presented in Melchor-Couto (2017) and sets out to analyse how learners of different affective profiles experience VW anonymity in FL oral interaction. The overarching research question is the following: What effect does the anonymity afforded by VWs have on participants that present different affective profiles when they interact orally in the FL with native speakers of the target language?

A total of 3 secondary questions have been formulated to address the main research question:

- Is there a correlation between the anonymity experienced and the participants' FLA profile?
- Is there a correlation between the anonymity experienced and the participants' self-efficacy beliefs profile?
- Is there a correlation between the anonymity experienced and the participants' personality profile?

The following section includes a literature review on VW anonymity in relation to FLA, introversion/extraversion and self-efficacy.

## 2. Literature review

Virtual worlds are "persistent virtual environments in which people experience others as being there with them - and where they can interact with them" (Schroeder, 2008: 2), where every user is represented by an avatar, "an interactive representation of a human figure in a games-based or three-dimensional interactive graphical environment" (De Freitas, 2006: 35). VWs represent an alternative platform for FL interaction, as they integrate not only written and voice chat capabilities but also a wide range of additional features that, unlike other CMC environments, support both verbal and nonverbal communication (Wigham & Chanier, 2013). Users may also resort to in-world features such as virtual objects, the actual virtual space or even music or sounds for meaning-making, thus resulting in extremely rich multimodal interactions. The multimodality of this particular type of interaction has been extensively researched —studies have been undertaken on the interaction between avatars and objects (Panichi, 2015), on the role of social presence (Satar, 2013), non-verbal communication (Wigham & Chanier, 2013) or on how the virtual scenario and avatar actions may affect exchanges (Jauregi, Canto, de Graaff, Koenraad, & Moonen, 2011) among other examples.

As it is the case with other CMC environments such as audioconferencing and text chat, in VWs users cannot be seen by their interlocutors. This difference can alter interactional dynamics and may even be beneficial for FL learners. In fact, VWs have been described as low-anxiety environments (Dickey, 2005) where learners may feel "shielded" by their avatars (Rosell-Aguilar, 2005). The concept of anonymity in CMC has been widely explored in research fields outside language learning. Keipi, Oksanen, and Rasanen (2015) mention three different types of online anonymity: visual anonymity, where one's physical appearance cannot be seen; pseudonymity, when users make themselves known through a username; and full anonymity, when no information at all is shared. In VW oral interaction, we encounter visual anonymity and pseudonymity, but not full anonymity, as users' generally use their own voice to communicate, therefore revealing information about their sex and an indication of their age. These types of anonymity are labelled by Lapidot-Lefler and Barak (2012) as "unidentifiability" and "namelessness". According to these authors, the key element for online anonymity is not so much that our name is not disclosed but rather that crucial demographic information is not made available. "Online unidentifiability thus makes it possible to use real names while remaining relatively anonymous, as long as other identifying details remain concealed" (Lapidot-Lefler and Barak, 2012: 435). As explained by these authors, the anonymity afforded by CMC gives users a sense of invisibility, which may lead to heightened disinhibition (Lapidot-Lefler and Barak, 2012).

Similarly, Hammick & Lee explain that CMC provides a "sheltering effect to interactants" (2014: 303). Users perceive their social presence to be lower when interacting via a VW, which may result in them feeling that the consequences of failure are lessened (Joinson,

2004). This effect would be particularly useful for shy learners. In fact, scholars from the field of media and communication have found introverted and neurotic subjects to prefer communicating through an online environment, whereas extroverted and non-neurotic subjects expressed a preference towards traditional interaction (Amichai-Hamburger, Wainapel and Fox, 2002). This is due to the lack of visual cues available in VWs, which prevents shy users from identifying negative judgement from their interlocutors (Stritzke, Nguyen & Durking, 2004). In CALL literature, scholars have also suggested that CMC environments may be particularly suited to shy learners, who may feel insecure when it comes to using the FL (Cooke-Plagwitz, 2008; Roed, 2003; Tudini, 2007).

As previously mentioned, VW interaction may have a positive impact on the anxiety levels that may be experienced by users. In CALL studies, this is particularly relevant for learners who experience Foreign Language Anxiety.

The term anxiety may refer to various constructs: the anxiety that one feels in daily life ("trait anxiety") or rather to the anxiety associated with specific activities ("state anxiety") (Spielberger, 1983). In the language learning context, Horwitz, Horwitz & Cope (1986) coined the term "Foreign Language Anxiety" (FLA), which is defined as "a distinct complex of self-perceptions, beliefs, feelings and behaviours related to classroom language learning arising from the uniqueness of the language learning process" (Ibíd, 1986: 128). Scholars have studied the potential effects of FLA for decades (Horwitz et al. 1986; MacIntyre & Gardner, 1989; Young, 1991, 1999). Most researchers concur that FLA tends to affect language learners negatively (Hewitt & Stephenson, 2011; MacIntyre & Gardner, 1991; Steinberg & Horwitz, 1986) although a number of authors maintain that FLA may also motivate and challenge students (Brown, 2000; Ehrman & Oxford, 1995). FLA may be triggered by any FL activity, although reading is seen as the least anxiety-generating skill (MacIntyre, Noels & Clément, 1997) and speaking as the most anxiety-provoking language learning activity by both students (Koch & Terrell, 1991; Young, 1990) and scholars (Pichette, 2009; Young, 1999).

A limited number of studies have analysed the link between anonymity and FLA in audioconferencing and written chat, but very few have focused on VWs. The results obtained by Arnold (2007) and Satar & Özdener (2008) indicate that FLA levels decrease in VW written chat interactions. Similarly, Reinders and Wattana (2015) concluded in their study on oral interaction that the participants, who communicated orally via a videogame for 15 weeks, reported to have experienced lower FLA levels. Wehner, Gump, and Downey (2011) compared the FLA levels of 21 Spanish students that interacted orally via a VW with those of another group that completed similar tasks in the traditional classroom. FLA levels were lower in the VW group than in the classroom group. This conclusion was also yielded by the research study undertaken by Melchor-Couto (2017).

There are, however, other aspects that come into play in VW interaction which may cancel out the presumed positive effects of anonymity. When interacting via a VW or audioconferencing software, we cannot access facial speech cues such as lip reading, which may hinder comprehension. In fact, Hampel (2003) and Hampel *et al.* (2005) observed in a study that communication seemed to be impaired by the lack of non-verbal cues. The fact that learners cannot read their interlocutors' lips may trigger higher FLA levels in learners (Hampel, 2003; Hampel, Felix, Hauck & Coleman, 2005), which would therefore counteract the positive effect of anonymity described above. It may also result in a feeling of

disembodiment, which may be liberating for some users and restricting for others (Hampel *et al.*, 2005). Childs (2010: 104) argues that some users can experience a rejection toward VWs, which this author describes as "VW resistance". In fact, De los Arcos, Coleman & Hampel (2009) and Hampel *et al.* (2005) conclude that both effects are possible. The question remains what determines whether the anonymity afforded by the VW will have a positive or negative effect on users.

Self-efficacy beliefs refer to "people's judgment of their capabilities to organise and execute courses of action required to attain designated types of performances" (Bandura & Schunk, 1981: 31). Research conducted in the field of communication studies indicates that the anonymity afforded by certain CMC environments may lead participants to believe that they perform better than in face-to-face situations (Tanis and Postmes, 2007). Similar conclusions have been found in CALL research, although studies focusing on this variable in a VW context are arguably scarce. Henderson, Huang, Grant &Henderson (2009) found that a group of Chinese students presented higher self-efficacy beliefs after completing a task in Chinese in a VW. Zheng, Young, Brewer & Wagner (2009) compared the self-efficacy beliefs of two groups of English students, one of them who interacted in the FL via a VW and another one where students attended regular classes. The results obtained indicate that self-efficacy beliefs were higher amongst the VW students.

No studies have, to our knowledge, analysed if FL VW interaction is beneficial for students that present a specific personality profile. The present research intends to fill this gap in literature by analysing the relationship between VW anonymity, FLA, personality profiles and self-efficacy beliefs. The next section describes the methodology applied in the study.

## 3. Methods

### 3.1. Methodological approach

In order to obtain greater validity, both quantitative and qualitative data was collected concurrently and a triangulation design was followed (Creswell and Plano Clark, 2007).

### 3.2. Participants

The participants are 18 students (5 male, 13 female) aged between 19 and 20 years old and registered in a Spanish undergraduate degree at University of Roehampton (London). It must be noted that out of the 18 subjects, 4 were excluded from this study due to the non completion of one or more of the requirements. The participants were involved in a series of oral interaction activities described below as part of a compulsory Spanish module targeted at B1 level (Common European Framework of Reference for Languages, Council of Europe, 2001). Each of them was paired with an English student (B1 level) from Universidad de Cádiz (Spain) in order to engage in a series of telecollaboration tandem activities (English-Spanish).

An additional group of 68 students of Spanish from the same institution (levels ranging from A1 to B1) participated in the preparatory stage of this study by completing Horwitz et al.'s (1986) Foreign Language Classroom Anxiety Scale (FLCAS). This data was used as a reference to compare FLA scores obtained by the main study participants, as described in section 3.4.

Table 1 summarises the participants' information.

Table 1: Participants' information

### 3.3. Materials

A range of instruments, described below, was used to collect quantitative and qualitative data.

#### 3.3.1. Demographics questionnaire

This questionnaire (Annex 1) includes sixteen questions aimed at gathering information on the participants' background as well as their Internet, social media and VW usage.

#### 3.3.2. Foreign Language Classroom Anxiety Scale

The Foreign Language Classroom Anxiety Scale (FLCAS), developed by Horwitz, Horwitz and Cope (1986) is one of the most widely used questionnaires to measure FLA. It contains 33 items that must be rated on a 5-point Likert scale ranging from "strongly agree" to "strongly disagree". The items included in this scale refer to anxiety or communicative apprehension, test anxiety and fear of negative evaluation. This questionnaire was completed by all the study participants and also by the group of 68 students mentioned in section 3.2.

#### 3.3.3. Reduced Foreign Language Classroom Anxiety Scale

It must be noted that, although the FLCAS is a classroom anxiety test, it was deemed to be more suitable for the context of this study than other language anxiety tests available. The *English Use Anxiety Scale* (Clément *et al.*, 1977), for instance, focuses on *FLA* experienced when using the FL in daily life, which was not relevant for this particular research. The students who took part in this study were not in a classroom, but they were in an educational context, as the tasks that they had to complete were set and overseen by their tutors. Following other scholars (Arnold, 2007; Charle Poza, 2005; Kitano, 2001 and McNeil, 2014), a reduced version of Horwitz *et al.*'s FLCAS (1986) was used to measure the participants' FLA after every interaction session. A total of seven items were selected from the original instrument taking into account the study´s specific context and purpose [items 1, 2, 9, 12, 16, 18 and 31]. Items referring to test anxiety and classroom situations were excluded, as well as two items relating to hypothetical interactions with native speakers, as this was indeed the context in which the participants of the VW Group would be using their FL. Finally, all mentions to "FL" were replaced with "Spanish" and references to the "the language class" were changed to "the language exchange". A sample item is shown below.

*I never feel quite sure of myself when I am speaking in the language exchange.*

□ *Strongly agree* □ *Tend to agree* □ *Neither agree nor disagree* □*Tend to disagree* □ *Strongly disagree*

#### 3.3.4. Eysenck's Personality Questionnaire (EPQ-RS)

Eysenck's Personality Questionnaire was completed by the participants of the study in its revised and reduced version, known as Eysenck's Personality Questionnaire-Revised, Short form (EPQ-RS) (Eysenck *et al.*, 1985). This questionnaire consists of 48 yes/no items indirectly referring to the three personality dimensions identified by Eysenck, namely extraversion, neuroticism and psychoticism. It has similar reliability coefficient to that of the complete version (Weiner & Craighead, 2010: 635) and remains one of the most widely used personality instruments. Self-report measures are still the preferred method to assess personality (Paulhus & Vazire, 2007: 224). Their strength lies in "their easy interpretability, richness of information, motivation to report, causal force and practicality" (Ibíd: 227).

A sample item of the EPQ-RS is reproduced below for reference.

*Does your mood often go up and down? □ Yes □ No*

### 3.3.5. Self-efficacy beliefs test

The self-efficacy measure chosen for this study is the test developed by Kitano (2001:563). Other self-efficacy beliefs tests were taken into consideration (Mills, 2009; Henderson *et al.* 2009; Zheng *et al.*, 2009), but Kitano's was the most suited to our study considering the context of the interactions taking place. The questionnaire developed by Mills (2009) comprises 126 items based on the US Standards for Foreign Language Learning; Henderson *et al.* (2009) designed a test consisting of 14 items referring to the specific context of their study, namely interactions in a Chinese restaurant. Finally, Zheng *et al.* reflected different daily situations on the items used for their self-efficacy beliefs measure, related to daily situations such as reading the newspaper. Given the specific contexts for which these tests were designed and their lack of relevance for this study, the instrument chosen to measure self-efficacy beliefs in this paper, as mentioned above, is Kitano's (2001). This test consists of four statements that subjects have to rate on a 5-point Likert scale, ranging from "poor" to "very good". All references to "Japanese" were replaced by "Spanish" and one additional question referring to vocabulary was included. Below is a sample item:

*For my current level of study in Spanish, I think that my overall speaking ability in Spanish is... [1= Poor; 5= Very good]*

### 3.3.6. Open-ended questions

After every interaction session, the study participants answered three open-ended questions about how they felt (Annex 2). These questions were tested in the piloting stage and were kept open, as recommended by Campbell, McNamara and Gilroy, to allow participants to elaborate their answers freely (2004). The aim of these questions was to explore the participants' perceptions regarding the anonymity experienced.

## 3.4. Procedures

The participants completed a total of four oral interaction tandem sessions in Second Life (SL) that took place every 7-10 days. Students received reminders regularly to make sure that all activities were completed in a timely manner. Each session lasted a minimum of one hour, with half of the time devoted to Spanish and the other half to English, and they were carried out outside class times due to timetabling issues. It was the students' responsibility to arrange a date and time when they could meet every week. The topics selected for the interaction activities included national stereotypes, going to the cinema, the dangers of social media and a cultural tour around SL. The first three of the interaction sessions were held in University of Roehampton Virtual Campus in SL and the fourth one took place in various SL locations related to the Hispanic and English culture. A total of 15 "chatting spots" were created for the participants to complete the activities. Each chatting spot was equipped with a presenter screen showing questions related to the activity, in an attempt to spark up conversation should the participants run out of ideas, and two YouTube presenter screens with videos related to the topic being discussed in Spanish and English. This tandem activity was a compulsory element in the assessment for the English students. The aim of the exchange was to increase the students' motivation by presenting them with the opportunity to interact with native speakers of their FL in a novel environment, a virtual world.

Informed consent from all participants was obtained prior to the data collection phase. The instruments described in section 3.3 were disseminated for completion to all participants before and during the experiment and a variety of methods were used to do so, as described below. Prior to the start of the experiment, all participants were asked to complete the demographics questionnaire, the Self-efficacy beliefs test, Foreign Language Classroom Anxiety Scale and Eysenck's Personality Questionnaire. The first two tests were available electronically via the platform Kwiksurvey and the last two were disseminated using the traditional pen and paper approach. This difference in how the tests were distributed to participants responds to practical and methodological reasons. The FLCAS was completed by participants during class time, where they do not have access to computers. As for the Eysenck's Personality Questionnaire, the test's instructions state that it must be completed on paper. After every session, the participants were asked to answer the reduced FLCAS questionnaire and the open-ended questions. They were instructed to record their answers to both questionnaires on an audio file and to send them to their tutor immediately after every session. In the pilot study conducted previously, it was observed that answers provided on paper were excessively succinct. Therefore, this alternative method was devised in an attempt to encourage more elaborate answers.

### 3.6. Data coding and analysis

The data collected was anonymised by assigning an alphanumeric sequence to each subject. The responses to the open-ended questions were transcribed using the speech recognition software Dragon Naturally Speaking 12® and checked by the author prior to the analysis phase, resulting in a 7,800 words-long transcript. As proposed by grounded theory (Bogdan & Biklen, 2006), this data was coded by this author through labels reflecting recurrent themes arising from the analysis. The software NVivo 11® was used for this purpose in order to make the process simpler and to facilitate the analysis of the results. A total of 14 labels were identified (see Table 2 for a comprehensive list).

Table 2 shows the labels applied in the coding process as well as the frequency with which they were used and for how many of the participants. They refer to emotional states mentioned by the participants [*confidence/confident/less confident, less/more nervous, comfortable, less pressured, better self-efficacy beliefs*] and to how they experienced interaction via a VW – whether they benefited from not being seen by their interlocutors [*invisibility*], if the anonymity provided by the environment did not have any effect on them [*no difference*], if the lack of non-verbal cues made communication more difficult [*lack of non-verbal cues*], if they felt that interacting via an avatar was strange [*weird*], if they stated a preference towards face-to-face communication [*preference for F2F*], if feeling that they knew their interlocutors made a difference [*familiarity*] or if interacting via a computer gave them more focus to approach the task [*more focus*].

Table 2: Labels used for qualitative analysis.

The answers to the FLCAS, reduced FLCAS, Eysenck's Personality Questionnaire and Self-efficacy beliefs test were coded following the relevant test's scoring guidelines. Participants were allocated to the appropriate category as follows:

- high/average/low anxiety;
- extravert/introvert;
- neurotic/non neurotic;
- psychotic/non-psychotic;

- high/average/low self-efficacy beliefs.

Table 3 shows a summary of the data obtained. A brief explanation of the values presented is included below.

The subjects have been listed according to the effect experienced as a result of the anonymity afforded by the VW: positive effect (VW1, 2, 5, 6, 11 and 12), no effect (VW3, 7) and negative effect (VW4, 8, 9, 10, 13, 14). This classification was done on the basis of the comments provided to the open-ended questions, depending on whether they stated having experienced anonymity positively, negatively or in a neutral manner. The horizontal lines across the middle of the table separate the three groups.

The FLCAS column reflects the FLA subjects' scores prior to the start of the study, obtained through the completion of the full FLCAS. The lowest possible score, denoting low FLA, is 33 and the highest 165, indicating extremely high levels of FLA. This data was contrasted with the mean FLA of the 68 Spanish students previously mentioned in the participants section, who also completed de FLCAS.[1] Following Sparks & Ganschow (2007), scores higher than two thirds standard deviations above the FLA mean were classified as high FLA; scores between +0.67 and -0.67 (two thirds) standard deviations were classified as average FLA and those scoring more than two thirds standard deviations below the mean were classified as low FLA.

The psychotic profile column has been left blank, as the results obtained in the EPQ-RS questionnaire indicate that none of the participants fall within that category. The neurotic profile column, on the other hand, shows a total of 8 participants in that category, marked with an < x >.

Finally, the last column shows the participants' self-efficacy belief scores, which range from 0-5 (0 being low and 5 high self-efficacy beliefs). Scores from 0-2.4 were classified as low self-efficacy beliefs, scores from 2.5-3.5 as average and scores from 3.6 to 5 as high.

Table 3: Participants' summary of data ($N$ = 14)

All quantitative data was transferred to the software SPSS and a statistical analysis including non-parametric tests, Kendall's Tau-b test and $\chi 2$ test was performed.

## 4. Results

The descriptive statistics of the data indicate that all variables present low dispersion susceptible to bounding and are substantially ordinal except for FLA. A summary of the descriptive statistics is shown on Table 4, including value ranges (R), mean (M), standard deviation (SD), skewness (Sk), kurtosis (Kurt) and the resuls to Shapiro-Wilk's test (W). In terms of the significance of the ranges used, it must be noted that for "effect of anonymity", a numerical value has been assigned to the three categories reflected, namely 1 for positive effect of anonymity, 2 for neutral effect and 3 for negative effect.

Table 4: Descriptive statistics ($N$ = 14)

[1] The FLA mean of the scores obtained by the group of 68 students was 90.22 (SD= 23.66).

The data presented in Table 4 show a strong deviation from the normal distribution and high skewness and kurtosis. Shapiro-Wilk's *W* test, which is particularly suited to small groups (Field, 2009), was used to assess the normality of the data. Results suggest that only in the case of part of data such deviations from normal distribution must be statistically considered.

In order to answer the research questions reproduced below, a correlation analysis using nonparametric Kendall's Tau-b test was performed for all variables used in the study. This test was selected given its properties, which work well for ordinal data and small ranges (Field, 2009). The results, presented in Table 5, are explained below.

Table 5: Kendall's Tau-b correlations coefficients ($N$ = 14)

RQ1: *Is there a correlation between the anonymity effect experienced and the participants' FLA profile?*

As shown on table 5, no relation was found between the anonymity experienced and the subjects' FLA profile. Due to the small size of the sample, a chi squared $\chi^2$ test was additionally applied to compare the two variables and check if there is a significant relationship between them (Field, 2009). The result confirms, once again, the absence of significant relationships between the anonymity experienced and anxiety [$\chi^2$ (4, $N$ = 14) = 3.51, $p$ = .476; $V$ = .335].

The qualitative data collected shows that participants with all anxiety profiles experienced the anonymity afforded by the VW positively [high anxiety: VW11, VW12; average anxiety: VW2, VW5, VW6; low anxiety: VW1] and negatively [high anxiety: VW8, VW9, VW13; average anxiety: VW10; low anxiety; VW4 ,VW14]. A close analysis of the comments provided by the high-anxiety participants reveals that when anonymity was experienced positively, users reported to value the invisibility provided by the environment (VW11, VW12), which made them feel less pressured (VW11), more confident (VW11) and to feel that they are better at speaking Spanish (VW12).

Negative experiences of the VW seem to be related to either users facing increased difficulty in understanding their interlocutors due to the lack of non-verbal cues (VW8) or to users perceiving the VW as a strange environment (VW9), stating a preference towards face-to-face interaction (VW9, VW13).

RQ2: *Is there a correlation between the anonymity effect experienced and the participants' self-efficacy profile?*

The analysis revealed a strong and positive relationship between anonymity and self-efficacy. When self-efficacy beliefs scores are high, the effect of anonymity is also high ($b$ = .53, $p$ = .027). The range applied to this category is 1-3, 1 being a positive effect of anonymity and 3 a negative effect. This would mean that when self-efficacy beliefs are high, the effect of anonymity is negative. The $\chi^2$ test conducted confirms, once again, the relationship between anonymity and self-efficacy [$\chi^2$ (4, $N$ = 14) = 11.63, $p$ = .020, $V$ = .569].

The qualitative data available confirm this finding, showing that 4 out of the 5 participants with high self-efficacy beliefs claimed to have experienced a negative effect of anonymity, either due to the lack of non-verbal cues [VW8, VW13], preference towards face-to-face interaction [VW4, VW10, VW13] or simply due to a rejection of the VW, which is perceived as a strange environment [VW4, VW10]. In all cases except for VW13, which will be dealt with in more depth later on, references to these issues are recurrent, featuring in the comments provided after every session. VW5 was the only high-self-efficacy belief student

who claimed to have felt no effect whatsoever as a consequence of the anonymity experienced. The most relevant comments have been reproduced below:

"*Not being physically present in the language exchange is a problem for me because, even in English, I have to look at the speaker on the phone, as sometimes the connection cannot be that good and I can't always hear the speaking voice properly and it makes me feel a bit less confident speaking.*" VW8 Session 1

*"The further we go and the more sessions I do, the stranger it is not to be physically present because you feel you are getting to know somebody but actually you don't even know what they look like. It'd be quite nice to know what they look like.*" VW10 Session 3

*"I felt quite confident but a little bit nervous when I was doing my Second Life activity today because it was a bit overwhelming with speaking to someone over the Internet. It was ok but I prefer to talk to someone face to face because I find it easy to lip-read the person.*" VW13 Session 2

*"I don't like it, I like to be face-to-face to people, 'cause I feel I'm more confident, 'cause I'm just more bubbly and I can get my personality across in real life but it's harder over the Internet 'cause you don't know if they are taking your sense of humour and stuff the right way. I didn't feel nervous but I didn't feel confident either, it just felt very strange, to be honest.*" VW4 Session 1

As already mentioned, the comments provided by VW13 show that the way in which this participant experienced the VW evolved as weeks progressed. After sessions 1 and 2, VW13 claimed to have felt nervous and stated a preference towards face-to-face interaction, which makes it possible to lip read. However, after sessions 3 and 4 this student felt "quite comfortable speaking to my partner" (Session 3) and "really enjoyed today's Second Life" (Session 4). It seems that the familiarity developed towards their exchange partner made all the difference.

Finally, regarding the self-efficacy beliefs variable, it must be mentioned that a total of 4 related comments were identified from 3 participants with average (VW2, VW14) and low self-efficacy beliefs (VW12). Two of those comments have been reproduced below.

VW12: "*I feel like I know more things and I'm better in speaking Spanish when I don't have to look at a person for some reason.* (…) *It seems to be that I can speak better in Second Life than I would probably in a conversation.*"

VW14: "*Today I felt much more confident than the previous two times because I've got to know Rafa again a lot more and my Spanish I've felt has improved with speaking.*" [*sic*]

RQ3: *Is there a correlation between the anonymity effect experienced and the participants' personality profile?*

No relation was found between the anonymity experienced and the subjects' personality profile. The $\chi^2$ test applied confirms the same conclusion, namely the absence of significant relationships between the anonymity experienced and personality profiles [$\chi^2$ (2, $N$ = 14) = 3.11, $p$ = .211, $V$ = .408].

The analysis of the qualitative comments available shows that for the first participant, the VW experience was a positive one thanks to the invisibility provided by this environment, although this positive effect was less so once a sense of familiarity with their interlocutor was developed. For VW7, in turn, the experience was "weird" at the start, although this changed once they to know their interlocutor.

## 5. Discussion

Previous studies have proven that FLA levels are lower when oral interaction in the FL is established via VWs as compared to the traditional classroom environment (Melchor-Couto, 2017), Wehner *et al.*, 2011. However, as described in the results section, no relation was found between how the anonymity was experienced and the subjects' FLA profile. This would suggest that the reason for the lower levels of FLA experienced lies elsewhere and not in the anonymity afforded by these environments, or at least not solely. Factors such as the invisibility provided by the environment seem to lead to a positive experience of anonymity amongst high-anxiety participants. Negative experiences seem to be due to the lack of body language and to users feeling that the VW is a strange environment and/or preferring to interact face to face. One could say that, in principle, high-anxiety participants benefit from not being seen in the VW, but only as long as the lack of non-verbal cues does not exacerbate their anxiety and provided that they do not feel alienated by the environment itself. From a pedagogical point of view, when using CMC environments for FL interaction perhaps it would advisable for teaching practitioners to perform a preliminary assessment of the students' preferences and also to allow flexibility in terms of the CMC tool(s) to be used.

In terms of the second research question, the quantitative analysis shows that, when self-efficacy beliefs are high, the effect of anonymity is negative, which is also confirmed by the qualitative data collected. Once again, a negative experience of anonymity seems to be due to the lack of non-verbal cues, preference towards face-to-face interaction or simply due to a rejection of the VW. It may be the case that students showing high self-efficacy beliefs in the FL do not need to feel "shielded" by their avatars, which would mean that they do not benefit from the invisibility afforded. This would perhaps make these users more susceptible to the possible negative effects of VW interaction, which have already been mentioned. Once again, this finding would indicate that FL students would benefit from being able to select their preferred CMC environment for remote oral interaction. Perhaps language tutors could make a recommendation on the basis of the student's affective profile.

Finally, for the third research question, no relation was found between the anonymity experienced and the subjects' personality profile, although it must be noted that the majority of the participants are extravert, with only two introverted subjects in the sample. The analysis of the qualitative comments available shows that, once again, the invisibility provided by the environment was one of the main factors leading to positive experiences of anonymity, although this positive effect was less so once a sense of familiarity with their interlocutor was developed.

## 6. Concluding remarks and Limitations

As described in previous sections, the data analysed in this study confirms a strong relationship between self-efficacy beliefs and the effect of anonymity, whereby students with high self-efficacy beliefs experience VW anonymity negatively. Additional research with larger samples will be required to explore the connection between these two variables further. Conversely, no relationship was found between students' FLA or personality profile and the

effect of anonymity. Once again, it would be beneficial to conduct further studies using a larger student population, which may include a wider variety of personality profiles in terms of introversion/extraversion.

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**Annex 1 Demographics questionnaire**

Please answer the following questions.
1. Please enter your initials.
2. Please enter your date of birth.
3. Please specify if you are male or female.
4. How long have you studied Spanish for? Please specify if it was at school or university level.
5. How many hours per day do you use your computer/laptop/notebook for leisure?
6. Do you use social networks such as Facebook, MSN, Skype?
7. How often do you use those sites?
8. Do you use Facebook, MSN, Skype to chat with your friends?
9. How often?
10. Do you use the Blackberry or iPhone Messenger Service?
11. Do you use Skype to speak (not chat) with your friends?
12. How often?
13. Do you play videogames?
14. How often?
15. Do you use virtual worlds like Second Life, Active Worlds, Home?
16. How often?
17. Before doing this project, had you ever used Second Life?

**All your answers will be kept in strict confidentiality. Thank you!**

**Annex 2 Open-ended questionnaire**

Please answer the following questions at length.
1. How did you feel speaking Spanish in Second Life today?
2. How did you feel about not being physically present in the language exchange? Did this have any impact on how nervous/confident you felt speaking Spanish?

3. How did you feel today about making mistakes?

**All your answers will be kept in strict confidentiality. Thank you!**